A NEW SPECIES OF *CHLEROGAS* FROM THE ANDES OF CENTRAL COLOMBIA (HYMENOPTERA: HALICTIDAE)

Una especie nueva de *Chlerogas* de los Andes del centro de Colombia (Hymenoptera: Halictidae)

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ABSTRACT
A new species of the long-headed bee genus *Chlerogas* Vachal (Halictinae: Augochlorini) is described and figured from a male captured at high elevation in central Colombia. *Chlerogas tatamaensis* Engel & Gonzalez, new species, is distinguished from its congeners on the basis of integumental coloration and sculpturing as well as features of the male terminalia. A revised key to the species of *Chlerogas* is provided.

Key words. Andes, Anthophila, Apoidea, Augochlorini, Colombia, taxonomy.

RESUMEN
Se describe e ilustra una especie nueva del género de abejas de cabeza larga *Chlerogas* Vachal (Halictinae: Augochlorini) a partir de un macho capturado a grandes alturas en el centro de Colombia. *Chlerogas tatamaensis* Engel & Gonzalez, especie nueva, se distingue de otras especies del género por la coloración y puntuación del integumento como también por caracteres de los órganos genitales del macho. También se presenta una clave actualizada para las especies de *Chlerogas*.

Palabras clave. Andes, Anthophila, Apoidea, Augochlorini, Colombia, taxonomía.

INTRODUCTION

Bees of the genus *Chlerogas* Vachal are among the more distinctive of Neotropical halictines. Despite their characteristic habitus (Figs. 1–2, *vide etiam* Engel, 2009), moderate size (typically around a centimetre in total length), and distinctive apomorphies, individuals are infrequently encountered by melittologists and almost nothing is known of their biology. The genus was last revised by Brooks & Engel (1999) who recognized nine species, with a tenth species described by Engel *et al*. (2006) from Ecuador and the previously unknown males recently described for two others (Engel, 2009). Herein we provide the description of an eleventh species of *Chlerogas* captured in

central Colombia. The specimen discussed here was initially believed to be a geographic variant of a previously described species. Upon continued contemplation and more thorough examination of the characters, particularly the genitalia, it is clear that the specimen actually is representative of a new species and accordingly is described to make it known to melittologists. This species can be added to the general list of Colombian bees itemized by Smith-Pardo (2003) as well as the list of Andean bees provided by Gonzalez & Engel (2004). Morphological terminology generally follows Engel (2001) and Michener (2007).

Chlerogas tatamaensis, new species
(Figs. 1–4)

Holotype. ♂; [Colombia]: Parque Tatamá, Risaralda, Rio San Rafael, 4 Ene [Enero = January] 1993, C. Sarmiento, 2430 msnm; deposited in the Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá.

Diagnosis. The new species is close to *C. colombiensis* Brooks & Engel, with the genitalia being somewhat reminiscent of each other, particularly in volsellar shape (both species have short transverse volsellae). *Chlerogas tatamaensis* can be distinguished from *C. colombiensis* by the transverse dark brown bands on metasomal terga I and II (entirely amber in the latter species), the dark facial coloration with golden and green highlights (brilliant metallic green in *C. colombiensis*), the presence of a deep concave U-shaped medioapical notch on metasomal sternum V (such a notch absent in *C. colombiensis*), and by the structure of the terminalia (*cf.* Figs. 3–4 with figures in Brooks & Engel, 1999). Externally *C. tatamaensis* looks most similar to *C. townesi* Brooks & Engel, but the terminalia are considerably different as the latter belongs to a putative clade with greatly developed volsellae versus the short, transverse volsellae of *C. tatamaensis* and *C. colombiensis*, with the volsellar structure in *C. hirsutipennis* Cockerell being somewhat intermediate between these two classes of form.

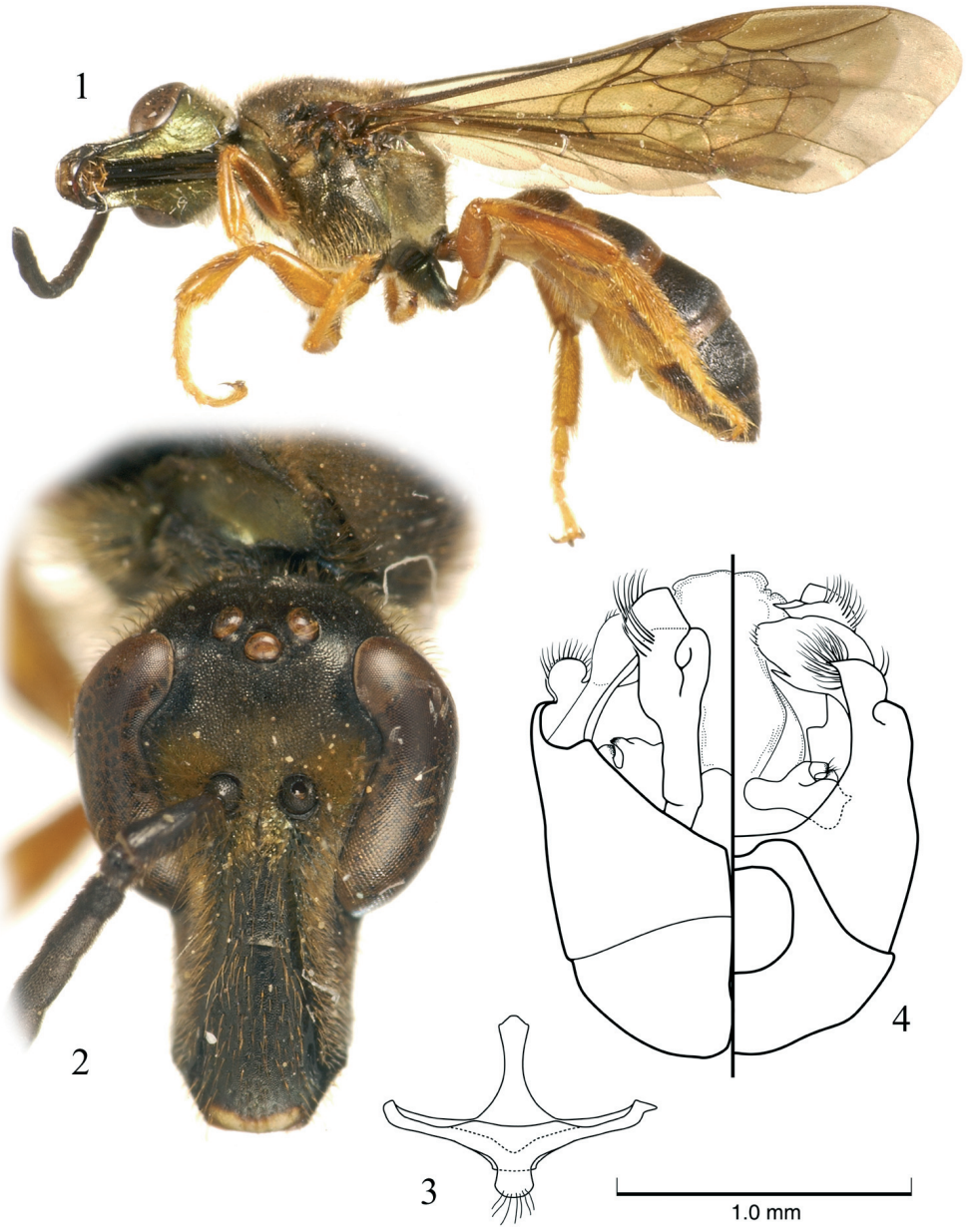
Description. ♂: Total body length 13.0 mm; forewing length 9.52 mm. Head 1.48 times longer than wide (Figs. 1–2), narrower than mesosoma. Gena about as broad as compound eye in profile. Base of clypeus below lower tangent of compound eyes by 0.17 mm. Head width 2.29 mm; length (to apex of clypeus) 3.38 mm; clypeal length 1.21 mm; malar space length 0.88 mm; lower interorbital distance 0.88 mm; upper interorbital distance 1.08 mm; intertorular distance 0.21 mm; torular-ocular distance 0.21 mm; torulus-median ocellus distance 0.67 mm; distance between lateral ocelli 0.25 mm; distance between lateral ocellus and median ocellus 0.13 mm; ocellocular distance 0.25 mm. Scape length 0.73 mm; pedicel as long as wide, length 0.16 mm; F1 as long as wide, length 0.21 mm; remaining flagellar articles longer than wide; F2 0.31 mm in length; F3–F4 each 0.39 mm in length; F5 0.43 mm in length; F6–F8 each 0.47 mm in length; F9 0.49 mm in length; F10 0.68 mm in length. Face with dense small punctures (punctures largely contiguous), such punctures becoming weaker and blending to granular integument in malar space and on vertex, and strongly imbricate integument on gena (with some weak rugae) and postgena; clypeus and supraclypeal area strongly imbricate with scattered shallow punctures. Intertegular distance 2.13 mm; mesosoma largely with small contiguous punctures, such punctures becoming ill-defined around median line of mesoscutum and integument granulose and imbricate; mesoscutellum as on mesoscutum, weakly bituberculate; metanotum rugulose; pleura with dense small punctures, integument otherwise strongly imbricate, punctures becoming weaker ventrally. Basal area of propodeum about as long as mesoscutellum, about 1.5 times as long as metanotum; lateral

surface with integument strongly imbricate, less so on posterior surface; basal area distinctly obliquely striate, striae reaching apical margin, medially striae become more minutely rugulose and granulose. Forewing with basal vein distad cu-a by 1.5 times vein width; 1rs-m basad 1m-cu by 2 times vein width; 2rs-m distad 2m-cu by 6.5 times vein width; marginal cell length 2.5 mm, width 0.63 mm; first submarginal cell slightly shorter than combined lengths of second and third marginal cells (as measured along their posterior borders); second submarginal cell scarcely narrowed anteriorly; anterior border of second submarginal cell along Rs slightly shorter than anterior border of third submarginal cell; distal hamuli arranged 3-1-3 on hind wing. Inner metatibial spur with five short teeth, not including apical portion of rachus. Metasomal terga and sterna imbricate; sternum IV with apical margin weakly concave medially; apical margin of sternum V with deep U-shaped apical emargination; sternum VI as in *C. townesi* (*vide* Brooks & Engel, 1999); hidden sterna and genitalia as in figures 3 and 4, respectively.

Integument weakly shiny on head and mesosoma, relatively dull on metasoma. Face dark brown with green and golden highlights, particularly strong around antennal toruli and upper supraclypeal area; apex of clypeus with transverse yellow mark (Fig. 2); labrum and antennae dark brown; mandible black with reddish apex; labiomaxillary complex dark brown to black; gena and postgena metallic green with golden highlights (Fig. 1). Mesosoma dark metallic brassy green, metallic coloration relatively subdued on mesoscutum and pleura. Legs amber, with some irregular longitudinal brown markings on dorsal and ventral surfaces of femora and tibiae; coxae not amber, same color as mesosoma. Wing membranes infumate; veins dark brown. Metasoma not metallic; metasomal tergum I largely amber, with apical transverse dark brown band near margin, margin amber; metasomal tergum II amber with dark brown transverse band occupying apical two-thirds of segment, margin amber; metasomal tergum III largely dark brown except basal, lateral, and apical margins amber; remaining metasomal terga dark brown, with extreme lateral margins amber and narrow apical margins semi-translucent; metasomal sterna I–III amber, remaining sterna dark brown.

Pubescence generally fulvous; setae of face generally simple, scattered, and suberect, becoming slightly more fuscous by vertex and with some minute branches, such setae intermingled with shorter, subappressed, plumose setae around antennal toruli and on face bordering clypeus (Fig. 2). Setae of mesosoma generally simple or with a few short branches, setae short to moderate length, becoming gradually longer ventrally; setae of mesoscutum and mesoscutellum more generally more fuscous than those of pleura; setae around pronotal lobe more dense and plumose; setae on lateral surface of propodeum more numerous and more densely branched, intermingled with very short, appressed, simple setae not obscuring integument; such setae not present on posterior surface of propodeum. Metasoma generally with scattered, suberect, simple or minutely-branched fulvous setae; such setae more numerous on successively more distal terga and intermingled with increasingly more numerous fuscous setae which become gradually longer toward apex. Sterna with scattered fulvous setae, such setae particularly elongate along apical margin of sternum IV, except not present medially along concavity; sternum V with elongate, apically-branched fulvo-fuscous setae along apical margin, such setae relatively dense, not present medially in deep U-shaped emargination.

Etymology. The specific epithet is taken from the National Park in which the species was collected, Parque Natural National Tatamá.



Figures. 1–4: Male holotype of *Chlerogas tatamaensis* Engel & Gonzalez, new species. **1,** lateral habitus; **2,** facial aspect; **3,** hidden sterna (sterna VII and VIII); **4,** genitalia (left side is dorsal aspect, right side is ventral aspect). Scale bar is for figures 3 and 4, while metrics for elements of figures 1 and 2 are provided in the description.

Comments. The species *C. nephos* Brooks & Engel, known only from a single female collected in Antioquia Province, is similar in some features to the males of both *C. colombiensis* Brooks & Engel and *C. tatamaensis* and may represent the female sex of one of these species (perhaps most likely *C. colombiensis* given the proximity of their type localities) or, just as likely, truly a third species in this complex. Continued exploration in Colombia is necessary in order to capture males and females together, and ideally nests of these bees, in order to provide further resolution to *Chlerogas* diversity.

Key to Species of *Chlerogas*

The following key is a key to species for the genus, with some revised and expanded elements from the one provided by Brooks & Engel (1999) but large portions are entirely new. In addition to the characters provided below, males of all species can be distinguished further by their terminalia as depicted in Brooks & Engel (1999), Engel *et al*. (2006), Engel (2009), and herein. In constructing the key we have attempted to rely largely on easily visible external features resulting in artificial groupings of species, whereas the genitalia and hidden sterna suggest what are more likely to be genealogical affinities [*e.g*., *C. colombiensis* and *C. tatamaensis* are perhaps close relatives, with *C. hirsutipennis* allied to them; *C. chlerogas* (Vachal) and *C. cyaneus* Brooks & Engel are close relatives (perhaps even basal in the genus); while *C. araguaensis* Brooks & Engel, *C. cooperi* Engel *et al*., *C. townesi*, and *C. tiara* Brooks & Engel likely form a clade].

1. Antenna with 10 flagellar articles; medioapical margin of metasomal tergum V entire (males) 2
—. Antenna with nine flagellar articles; medioapical margin of metasomal tergum V with slit (females) 11

2(1). Metasomal terga metallic green to blue; legs dark brown to black 3
—. Metasomal terga and legs largely amber to brown or black, not metallic 4

3(2). Integument between punctures ventrally on mesepisternum polished smooth or very faintly imbricate and shining; basal area of propodeum with weak striae in basal quarter to third .... *C. chlerogas* (Vachal)
—. Integument between punctures ventrally on mesepisternum strongly imbricate and weakly shining; basal area of propodeum with distinct and complete striae .... *C. cyaneus* Brooks & Engel

4(2). Head and mesosoma not metallic, brown to black; leg coloration variable 5
—. Head and mesosoma metallic green to blue, sometimes coloration is rather subdued on mesosoma and face (*i.e*., *C. tatamaensis*); legs largely amber, never entirely dark brown to black 7

5(4). Legs largely amber; apex of clypeus with transverse amber marking 6
—. Legs dark brown to black, without amber podites or markings; apex of clypeus dark brown, without transverse amber mark .... *C. boliviensis* Brooks & Engel

6(5). Metasomal sterna I–III brown .... *C. hirsutipennis* Cockerell
—. Metasomal sterna I–III amber .... *C. cooperi* Engel *et al*.

7(4). Metasomal terga I and II amber with transverse dark brown bands 8
—. Metasomal terga I and II entirely amber ..... *C. colombiensis* Brooks & Engel

8(7). Antennal scape dark brown to black 9
—. Antennal scape entirely amber .... *C. tiara* Brooks & Engel

9(8). Apical margin of metasomal sternum V deeply concave 10
—. Apical margin of metasomal sternum V entire .... *C. araguaensis* Brooks & Engel

10(9). Integument around median line of mesoscutum with well defined, small punctures separated by 0.5–1.75 times puncture width and imbricate; metallic green of head and mesosoma brilliant and shining .... *C. townesi* Brooks & Engel

—. Integument around median line of mesoscutum granulose and imbricate, with shallow, ill-defined largely contiguous punctures; metallic green of head and mesosoma dark and subdued, particularly on mesosoma where it appears largely as highlights dorsally or as dark metallic green on pleura and propodeum ..... *C. tatamaensis* **n. sp.**

11(1). Metasomal terga metallic green to blue, or nearly black with scattered metallic highlights; legs dark brown to black, without amber coloration 12

—. Metasomal terga without metallic coloration, instead amber and/or brown; legs largely amber, although some with extensive brown markings 14

12(11). Basal area of propodeum with distinct striae, sometimes only basally 13

—. Basal area of propodeum granular, without distinct striae .... *C. boliviensis* Brooks & Engel

13(12). Basal area of propodeum with distinct and complete striae; integument between punctures ventrally on mesepisternum strongly imbricate and weakly shining; malar space to compound eye length ratio 0.37 .... *C. cyaneus* Brooks & Engel

—. Basal area of propodeum with weak striae in basal quarter to third; integument between punctures ventrally on mesepisternum polished smooth or very faintly imbricate and shining; malar space to compound eye length ratio 0.48 ..... *C. chlerogas* (Vachal)

14(11). Face brilliant metallic green or brassy green 15

—. Face black or dark brown, with green or gold highlights .. *C. cooperi* Engel *et al*.

15(14). Mesoscutum with median longitudinal area of dark brown to black, nonmetallic integument, laterally metallic green 16

—. Mesoscutum entirely metallic green ..... *C. nephos* Brooks & Engel

16(15). Metasomal tergum II almost entirely brown; malar space to compound eye length ratio 0.32 .... *C. tiara* Brooks & Engel

—. Metasomal tergum II entirely amber, or nearly so; malar space to compound eye length ratio 0.41 .... *C. townesi* Brooks & Engel

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